

MULTIMEDIA



UNIVERSITY

STUDENT ID NO

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MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2015/2016

MAX2013 – 3D ANIMATION

(All sections / Groups)

01 MARCH 2016
2.30 p.m - 4.30 p.m
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 5 pages with 5 questions only.
2. Answer **FOUR** out of FIVE questions. All questions carry equal marks and the distribution of the marks for each question is given.
3. Please write all your answers in the Answer Booklet provided.

QUESTION 1 :

Skinning is the process of binding deformable objects to a skeleton. Typically, the deformable objects are NURBS or polygonal surfaces.

a) **DESCRIBE FOUR** binding methods that are available in Maya .
(8 marks).

b) Autodesk Maya provides several methods to smooth skin a model. Which smooth skin methods eliminates the candy-wrapper effect commonly found in classic linear smooth-skinning?
(2 marks)

QUESTION 2 :

An understanding of Animation Layers and Graph Editor in Maya is crucial in an efficient animation process.

a) **LIST** the benefits of using animation layers?
(5 marks).

b) The Curve menu in Maya's Graph Editor has the ability to automatically generate the specific type of animation. **EXPLAIN** the pre-infinity and post-infinity cycles that are available in the Graph Editor.
(2 marks)

c) Give **ONE** example on the use of the answer from (b) in an animation.
(1 mark)

d) What does selecting the Oscillate setting do to an animation curve?
(2 marks)

Continued

QUESTION 3 :

a) **EXPLAIN** the terms Forward Kinematics (FK) and Inverse Kinematics (IK) .
(2 marks).

b) Inverse Kinematics has an attribute which is vital in helping a character exert force onto a surface. **NAME** this attribute and provide **ONE** example of its use in a 3D character animation.
(3 marks)

c) The image below shows a joint chain with an IK applied to it. **EXPLAIN** why the IK will not work properly.
(2 marks)



d) When IKs are placed on the arms and legs of a character, what constraint can you use to avoid the joints from flipping when it reaches its limit?
(1 mark)

e) Give **ONE** example on when IK and FK switch would be used by an animator.
(1 mark)

f) What technique can be used to create multiple pivot points for a 3D object?
(1 mark)

Continued

QUESTION 4 :

a) Set Driven Key is a type of reactive animation. What is the FUNCTION of Set Driven Key?

(2 marks)

b) Both Connection Editor and Set Driven Key have its respective advantages and usage of the latter often offers a far more flexibility in terms of control. However, what do both of them have in common?

(2 marks)

c) What are Constraints and what are they useful for?

(2 marks)

d) Andy applies an Orient Constraint onto a cylinder, which enables it to follow the rotational value of a cube. With the constraint applied, all three of the cylinder's rotation attributes in the Channel Box are highlighted in blue. While Andy is in the process of animating, he accidentally keyframes (the "s" key) the cylinder. The rotation attributes are now highlighted in a different color. What is the color?

(1 mark)

e) There are SIX common constraints available in Maya.

(i) The usage of this constraint is useful to control an object's orientation so that it aims at another object. What is this constraint called?

(1 mark)

(ii) Name **ONE** example on when you can use the constraint you named from Question 4(e)(i).

(1 mark)

(iii) The action of a character picking up a bottle from a table, walking across the room and putting the bottle back on another table can be achieved by using constraints. Name **ONE** constraint that is commonly used during this animation process.

(1 mark)

Continued

QUESTION 5 :

a) There are six types of Non-Linear Deformers. Describe **FOUR** of them.
(4 marks)

b) John is planning to use a Blendshape Deformer to generate facial expressions for his character. John would like to first, create a smiling expression for his character. He would then duplicate the original mesh of his character and put the duplicated mesh aside. John can now model a smiling version of his character. In the middle of his progress, John extruded a face to further enhance the character's smile. Upon completion, John would like to test the Blendshape first before proceeding to other facial expressions. Unfortunately, the Blendshape doesn't work. What was John's mistake and why?
(4 marks)

(c) Jiggle Deformer causes points on a surface or curve to shake as they move, speed up, or slow down. LIST down **TWO** examples where Jiggle Deformer can be used.
(2 marks)

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